## SOUTH CAROLINA PUBLIC SERVICE COMMISSION DOCKET NO. 2002-1-E DIRECT TESTIMONY OF CAROLINA POWER & LIGHT COMPANY

## WITNESS RONNIE M. COATS

- 1 Q. Mr. Coats will you please state your full name, occupation, and address?
- 2 A. My name is Ronnie M. Coats. I am employed by Carolina Power & Light
- Company as Senior Fuels Coordinator. My business address is 411 South
- Wilmington St, Raleigh, North Carolina.

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- 5 Q. Please summarize briefly your educational background and experience.
- I graduated from North Carolina State University in 1967 with a B.S. Degree in
  Chemical Engineering. I also obtained a Master of Business Administration Degree
  from the University of North Carolina at Chapel Hill in 1989. I am a member of
  the American Institute of Chemical Engineers (AIChE) and Professional Engineers
- of North Carolina (PENC). I am a registered Professional Engineer in the state of

North Carolina and South Carolina. I joined CP&L in 1968 and have held several

- engineering and management positions related to the design, construction, and
- operation of generating plants. These include: Principal Engineer, Manager of
- Generation Services, and Manager-Environmental Compliance. In December,
- 2001, I assumed the position of Senior Fuels Coordinator in the System Resource
- Planning Section of Carolina Power and Light Company's System Planning and
- Operations Department. In my current position, I am responsible for maintaining
- an oversight of fuel planning and procurement activities related to CP&L's
- regulated fleet to ensure that a reliable and economical supply of fuel is available to
- 20 meet the operating requirements of the regulated generating facilities.

- 1 Q. What is the purpose of your testimony here today?
- 2 A. The purpose of my testimony is to review the operating performance of the
- Company's generating facilities during the period of January 1, 2001 through
- December 31, 2001 and the expected operating performance of the nuclear units for
- the projected period April 1, 2002 to March 31, 2003.
- 6 Q. Describe the types of generating facilities owned and operated by CP&L.
- 7 A. CP&L owns and operates a diverse mix of generating facilities consisting of hydro
- facilities, combustion turbines, fossil steam generating facilities, and nuclear plants.
- 9 Q. Why does CP&L utilize such a diverse mix of generating facilities?
- Each type of facility has different operating and installation costs and is generally 10 A. intended to meet a certain type of loading situation. In combination, the diversity of 11 the system, in conjunction with power purchases made when doing so is more cost-12 effective than using a CP&L generating unit, allows CP&L to meet the 13 continuously changing customer load pattern in a reasonable, cost-effective manner. 14 The combustion turbines, which have relatively low installation costs but higher 15 operating costs, are intended to be operated infrequently. They also provide 16 resources that can be started in a relatively short time for emergency situations. In 17 contrast, the large coal and nuclear steam generating plants have relatively high 18 installation costs with lower operating costs, and are intended to operate in a 19 manner to meet the constant level of demand on the system. Based on the load level 20 that CP&L is called on to serve at any given point in time, CP&L selects the 21

combination of facilities which will produce electricity in the most economical

1 manner, giving due regard to reliability of service and safety. This approach
2 provides for overall minimization of the total cost of providing service.

Q. Please elaborate on the intended use of each type of facility CP&L uses to generate electricity.

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As a general rule, peaking resources such as combustion turbines, are constructed with the intention of running them very infrequently, i.e., only during peak or emergency conditions. Therefore, as a rule, they have a very low capacity factor, generally less than 10%. Because combustion turbines can be started quickly in response to a sharp increase in customer demand, without having to continuously operate the units, they are very effective in providing reserve capacity. Intermediate facilities are intended to operate more frequently and are subject to daily load variations. Because these facilities take some time to come from a cold shut down situation, they are best utilized to respond to the more predictable system load patterns. Additionally, these plants, located across the Company's service territory, contribute to overall system reliability. As a rule, they operate with capacity factors in the range of 10% to 60%. CP&L's intermediate facilities are predominately older coal plants. Baseload facilities are intended and designed to operate on a near continuous basis with the exception of outages for required maintenance, modifications, repairs, major overhauls, or for refueling in the case of nuclear plants. These plants are traditionally called on to operate in the 60% and greater capacity factor range. CP&L's four nuclear units and four larger coal units constitute the Company's baseload facilities.

- Q. How does CP&L ensure that it operates these three types of generating facilities as economically as possible?
- A. The Company has a central Energy Control Center which monitors the electricity 3 demands within the CP&L service area. The Energy Control Center regulates and 4 5 dispatches available generating units in response to customer demand. Sophisticated computer control systems match the changing load with available 6 sources of power. Personnel at the Energy Control Center, in addition to being in 7 contact with the Company's generating plants, are also in communication with other 8 utilities bordering our service territory. In the event a CP&L plant is suddenly 9 forced off-line, the interconnections with neighboring utilities help to ensure that 10 service to our customers will go uninterrupted. Additionally, it allows CP&L 11 12 access to the unloaded capacity of neighboring utilities so that CP&L customers will be served by the lowest cost power available through inter-utility purchases. 13

## 14 Q. How does CP&L determine when it needs to purchase power?

- 15 **A.** CP&L is constantly reviewing the power markets for purchase opportunities. We
  16 buy when there is reliable capacity available that is less expensive than the
  17 resources we currently have or are considering building. This is done on an hourly,
  18 daily, weekly, monthly, yearly, and multi-year basis.
- 19 Q. When all available facilities are operating and more power is needed, what
  20 happens?
- 21 A. There are several courses of action that could be taken. One is to go to the power
  22 markets for purchase opportunities. A second is to call on reserves from
  23 neighboring utilities. CP&L participates in the VACAR reserve sharing group.

VACAR is made up of several utilities in Virginia and the Carolinas. Each member of the group maintains a reserve of capacity that may be called on and scheduled to another member that is in need. If there is absolutely no power available, the only action remaining is to reduce the demand on the system to maintain the integrity of the interconnection. This is accomplished through the General Load Reduction Plan (GLRP). The plan begins with voltage reduction and customer appeals, progresses to interrupting curtaillable industrial customers and then to rotating outages. CP&L makes every effort to avoid implementation of the GLRP by maintaining adequate reserve levels and maintaining the generation fleet for reliable operation.

Q.

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During the review period January 1, 2001 through December 31, 2001, did CP&L prudently operate its generating system within the guidelines discussed in regard to the three types of facilities?

Yes. Two different measures are utilized to evaluate the performance of generating facilities. They are equivalent availability factor and capacity factor. Equivalent availability factor refers to the percent of a given time a facility was available to operate at full power if needed. Capacity factor measures the generation a facility actually produces against the amount of generation that theoretically could be produced in a given time period, based on its maximum dependable capacity. Equivalent availability factor describes how well a facility was operated, even in cases where the unit was used in a load following application. CP&L's combustion turbines averaged 87% equivalent availability for the twelve-month review period ending in December 2001, and 3% capacity factor indicating that they were almost

always available for use but operated minimally. This is consistent with their intended purpose. CP&L's intermediate, or cycling units, had an average equivalent availability factor of 92% and a capacity factor of 58%, again indicative of good performance and management. CP&L's fossil baseload units had an average equivalent availability of 91% and a capacity factor of 68%. Thus, the fossil baseload units were well managed and operated. CP&L's nuclear generation system achieved a net capacity factor of 89% for the twelve-month review period. Excluding outage time associated with reasonable refueling outages, the nuclear generation system's net capacity factor rises to approximately 101.9%. The Harris plant had a scheduled outage that involved both a refueling and steam generator replacements. The steam generator work required the removal and replacement of three steam generators that weigh over 375 tons each and stand over 83 feet tall. This outage lasted 103 days. Brunswick Unit 2 and Robinson Unit 2 had refueling outages, with duration's of 32 and 35 days respectively. These were very short outages, with the Brunswick 2 outage being the shortest ever for that unit. Also, I want to point out that in October, 2001, Brunswick Unit 1 set a new record for the longest continuous operation for a Boiling Water Reactor, breaking the previous record of 581 days held by Brunswick Unit 2. Brunswick Unit 1 continued its record run and on January 21, 2002, it surpassed the longest continuous operation for a light water reactor of 668 days. Therefore, pursuant to S.C. Code Ann. § 58-27-865(F), since the adjusted capacity factor exceeds 92.5%, CP&L is presumed to have made every reasonable effort to minimize the cost associated with the operation of its nuclear generation system.

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- 1 Q. How did CP&L's nuclear production in 2001 compare to previous years?
- 2 A. CP&L's nuclear generating plants during 2001, produced over 24 million
- megawatt-hours and provided 45% of the total electric generation. Brunswick Unit
- 4 1 set a station generating record during the year, generating over 7 million
- 5 megawatt-hours. It should be noted that CP&L's nuclear plants incurred 3
- refueling outages during 2001, compared to two refueling outages in 2000.
- 7 Q. You have not specifically addressed the performance of CP&L's hydro units.
- 8 Please discuss their performance.
- 9 A. The usage of the hydro facilities on the CP&L system is limited by the availability
- of water that can be released through the turbine generators. The Company's hydro
- plants have very limited ponding capacity for water storage. CP&L operates the
- hydro plants to obtain the maximum generation from them; but because of the small
- water storage capacity available, the hydro units have been primarily utilized for
- peaking and regulating purposes. This maximizes the economic benefit of the units.
- For the review period, the hydro units had an equivalent availability of 78% and
- operated at a capacity factor of 13%.
- 17 Q. How did the Company's fossil units perform as compared to the industry?
- 18 A. Our fossil steam system operated well during this review period, achieving an
- equivalent availability of 92%. This exceeds the most recently published NERC
- average equivalent availability for coal plants of 84%. The NERC average covers
- 21 the period 1996-2000 and represents the performance of 891 units. Equivalent
- 22 availability is a more meaningful measure of performance for coal plants than
- capacity factor because the output of our fossil units varies significantly depending

- on the level of system load. Our larger fossil units, Roxboro Units 2, 3, and 4 and
  Mayo Unit 1, operated at equivalent availabilities of 92%, 93%, 91%, and 90%,
  respectively. As I mentioned earlier, the baseload coal units achieved an average
  equivalent availability of 91%.
- 5 Q: How did the performance of CP&L's nuclear system compare to the industry
  6 average?
- 7 A: During the period January 1, 2001 through December 31, 2001, CP&L's pressurized water reactors ("PWRs"), Robinson Unit 2 and Harris Unit 1, achieved capacity factors of 92% and 71%, respectively. On average, these nuclear units operated at 9 an 81% capacity factor during the test period. In contrast, the NERC five-year 10 11 average capacity factor for 1996-2000 for all commercial PWRs in North America was 79%. Brunswick Units 1 and 2, which are both boiling water reactors 12 ("BWRs"), achieved capacity factors of 102% and 92%, with an average of 97%. 13 14 The NERC five-year capacity factor average for 1996-2000 for all BWRs was 71%. 15 CP&L's nuclear system incurred a 0% forced outage rate during the test period compared to the industry average of 10%. 16
- 17 Q. Are you presenting any exhibits with your testimony?
- Yes. Coats Exhibit No. 1 is a graphic representation of the Company's generation system operation for the twelve-month review period.
- Q. Please describe the projected performance of CP&L's nuclear system for the time period April 1, 2002 through March 31, 2003.
- A. Including the impact of planned refueling outages, I project that CP&L's nuclear units will achieve an average net capacity factor of 93% during this period.

- 1 Q. Does this conclude your testimony?
- · 2 A. Yes.

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Q [Mr. Austin] Mr. Coats, would you give us a summary of your testimony?

The purpose of my testimony is to review the operating performance of the Company's generating facilities during the calendar year 2001, and the expected operating performance of the nuclear units for the projected period April 2002 through March 2003.

During 2001, the CP&L generation system performed extremely well. Our nuclear units had an average net capacity factor of 89% over the review period without adjustments to reflect reasonable outages such as refueling outages. During 2001, three of our nuclear units had refueling outages. At our Harris Plant, the refueling outage also included the replacement of the steam generators. Adjusting for these reasonable refueling outages, our nuclear capacity factor rises to 101.9%, which exceeds the 92.5% standard established by South Carolina general statute.

Our fossil plants also operated well and had an equivalent availability factor of over 92%. Our plant performance achievements demonstrate excellent and prudent plant operations. For the projected period during which the rates established in this proceeding will be in effect, I estimate CP&L's nuclear units will

1		achieve an average net capacity factor of 93%.
2		That concludes my summary.
3		MR. AUSTIN: Mr. Chairman, we tender
4		the witness.
5		CHAIRMAN SAUNDERS: Mr. Elam?
6		MR. ELAM: No questions
7		CHAIRMAN SAUNDERS: Ms. Belser?
8	ļ	MS. BELSER: Thank you, Mr. Chairman.
9	CROS	S EXAMINATION BY MS. BELSER:
10	Q	Good morning, Mr. Coats.
11	A	Good morning.
12	Q	Mr. Coats, do you have a copy of your testimony with you?
13	A	Yes, I do.
14	Q	Would you turn to page five?
15	A	[Examining] Okay.
16	Q	At the top of page five, in response to a question on
17		page four, you talk about the General Load Reduction
18		Plan.
19	Α	Yes, ma'am.
20	Q	Was the General Load Reduction Plan utilized during the
21		review period, to your knowledge?
22	A	To my knowledge it was not used during the review period.
23	Q	Okay. But the Plan — could you explain the Plan, how it
24		works as far as — I'm looking at lines six and seven,

the sentence that says, 'The Plan begins with voltage 1 2 reduction and customer appeals'. What exactly is that? Yes, ma'am. The purpose of the Plan would be, if we were 3 4 in a situation where there was more demand than we could provide, it provides a mechanism for dealing with that 5 6 and it's a tiered approach. One of the first approaches 7 is to make an appeal to customers to cut back on their 8 usage so as to lower the demand. A second step would be 9 that we can actually lower our system voltage slightly, 10 and that also lowers the demand requirements on the 11 system. So it's a tiered approach that accomplishes 12 that. 13 And the next tier would be Interruptible Customers, 14 interrupting them. 15 You could go to the point of Interruptible Customers and 16 eventually to curtailment if that were required. 17 Are you aware at any point during the review period that 18 it was necessary to interrupt power to those customers 19 under the Interruptible Tariff? 20 I am not aware of whether that was necessary or not 21 during the review period. 22 0 Okay. And then the final tier is what you called 23 rotating outages, is that correct? 24 Yes, ma'am. Α

1	Q	Is that similar to those rolling blackouts we heard about
2		in California last year?
3	A	It would have a similar affect, yes, ma'am, of
4		selectively reducing loads for short — or selectively
5		cutting off loads for short periods of time in certain
6		areas and rotating it around.
7	Q	Okay. And that was not necessary during this review
8		period?
9	A	No, it was not.
10	Q	Just for information, do you recall any time in the near
11		past that CP&L has had to utilize those rotating outages?
12	A	I do not recall a time that we've had to utilize the
13		rotating outages.
14	Q	Okay. I'm looking at page eight of your testimony. The
15		question is on line 20, and it's related to the projected
16		performance from April 2002 to March 2003, and in
17		response to that question, you state that you project
18		CP&L's nuclear units will achieve an average net capacity
19		factor of 93%.
20	A	Yes, ma'am.
21	Q	How did you reach that projected net capacity factor?
22	A	That projection is based on looking at the period in
23		question, uplining an operating factor for the time
24		period that the nuclear units would be running, and we
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basically assume 100% for that time that they would be on 1 line and taking away from that period any scheduled 2 nuclear outages. 3 During this future period, we are scheduled for two 4 nuclear refueling outages, as opposed to three, as I 5 indicated we have had in the test period for this time. 6 7 Thank you very much. Okay. 8 MS. BELSER: That's all I have, Mr. 9 Chairman. 10 CHAIRMAN SAUNDERS: Commissioners? 11 Commissioner Carruth? 12 COMMISSIONER CARRUTH: Thank you, Mr. 13 Chairman. 14 EXAMINATION BY VICE CHAIRMAN CARRUTH: 15 Q Good morning, Mr. Coats. 16 Α Good morning. 17 Mr. Coats, in your testimony — and this is something 18 that Ms. Belser alluded to a minute ago when she went 19 over your page four and page five of your testimony -20 I'm at the bottom of four and going onto the top of five 21 down to the middle of the page. In that section you have 22 essentially indicated that when you run out of power, as 23 far as what you can generate that you still need to serve 24 load, what the steps are that you undergo and what you've

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•1	got recourse to in the way of attempting to reduce demand
2	on the one side for it, or increase your supply of it by
3	procuring it from other sources; and you've gone into
4	neighboring utilities, VACAR, kind of a hierarchy of
5	things. Given the discussion recently in the context of
6	FERC and RTOs and pertinent considerations having to do
7	with reserved capacity and whether or not reserved
8	capacity of our utilities is adequate, do you have
9	anything, any opinion, on that or any information to
10	deliver to us concerning reserved capacity and the
11	contingencies that you speak of, how remote is the
12	likelihood that you may have recourse to go through the
13	tier, and what your experience has been over time?
14	A Yes, sir. We have an active planning process in place
15	and it's our intent in that planning process to ensure
16	that we have capability to meet projected load that we
17	foresee and, you know, those plans are in place out to
18	ten years in advance. We're comfortable right now that
19	our reserve margins are adequate. The contingency plan
20	that's referred to here in my testimony is certainly a
21	plan that could be called upon if you had a very unusual
22	set of circumstances, perhaps of extreme weather, as well
23	as some forced outages on some units, but from a planning
24	point of view we're confident that our reserves will be

1		adequate for the future.
2	Q	And what is that figure right now for your system?
3	A	The exact figure, I don't have in mind. We're somewhere
4		in the area of 15 to 16%, I believe, but that's subject
5		to check.
6	Q	And you would say, given that and what your experience
7		has been over time, you would expect it to remain a
8		rather remote possibility that any of this tier would be
9		gone into to meet what your demands might be, given what
10		your ability to serve your load —
11	A	To go into the full tier, yes, sir. Getting to a point
12		perhaps of a customer appeal or a voltage reduction where
13		that's the economical thing to do, you know, that's not
14		unforeseeable, but getting to the stage of actually
15		having to have rotating outages, I think would be a very
16		remote possibility.
17	Q	Thank you very much, Mr. Coats.
18		COMMISSIONER CARRUTH: Mr. Chairman,
19		that's all I have for this witness.
20		CHAIRMAN SAUNDERS: Commissioner
21		Atkins?
22	EXAM:	INATION BY COMMISSIONER ATKINS:
23	Q	Good morning, Mr. Coats. How are you?
24	A	Good morning.

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Let me being by apologizing for coming in late. I got caught up.

On page four of your prefiled testimony, lines 15 and 16 and 17, you state there in regards to the need to purchase power that CP&L was constantly reviewing the power markets for purchase opportunities. 'We buy when there is reliable capacity available that is less expensive than the resources that we currently have or are considering building.' I don't know if this is in some of the other testimony or not, but I want to ask you, do y'all have an avoided cost by category? For example, for baseload or intermediate shoulder or peaking? And then, of course, in the next line, you talk about, you know, anywhere from hourly to multi-year, either short or long contracts. Do y'all have those numbers that you can make available to the Commission? I'm not sure what's available that has not been provided to the Commission. I can assure you that on a day to day, hour by hour operating basis as we're making those purchase power decisions we're making them against knowledge of what our current cost at that point is and that cost would be changing every moment and every hour, and then we would, if there is power on the market — we have people who are surveying this constantly — if we

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have a choice or an option of procuring power at a rate that would be cheaper than what our next increment to generate would be, then we would make those purchases. And that's done on a continuous basis throughout the day. I quess I asked that because again, kind of following along Commissioner Carruth's question, there's the idea of — as we have folks who come in and are trying to promote a wholesale generation market here within VACAR and SERC, as far as that goes, that they've given us certain data that shows what those costs would be based on the type of facilities and the capacity factor of the plants and those kinds of things; and that's what I was trying to get at to get some reasonableness of how y'all would fare in terms of your purchases versus some of the opportunities within the wholesale market, given that we know what their prices are, quote, unquote. Well, I think if we had a situation where we were looking to add additional capability, we could certainly look at our cost versus what may be available elsewhere and make the proper economic decision, and we would certainly prefer to be in a situation where we have the flexibility of looking at those situations and coming to the conclusion or the decision that's best for our overall economics and the overall economics of our customers.

1	Q	I guess my last question, again on the top of page five
2		you mention VACAR, but you don't mention SERC, so can you
3		explain why you don't look to SERC for power?
4	A	VACAR is a subregion of SERC and we have some standing
5		agreements with some of the utilities, or with the other
6		utilities that are in VACAR. They're neighbors, so to
7		speak, and that's typically the first place you would
8		look. We're not limited to that and we certainly have in
9		times past had transactions with SERC and have gone
10		outside of SERC where it was economical to do so to make
11		a purchase.
12	Q	So actually to the Midwest or —
13	A	Well, you run into some limits the further out you go,
14		just the ability to move power, but we have, up and down
15		the east coast, we've been able to make transactions with
16		a number of utilities, some of which are outside of SERC.
17	Q	Okay. Thank you. I appreciate it.
18		COMMISSIONER ATKINS: Thank you, Mr.
19		Chairman.
20		CHAIRMAN SAUNDERS: Mr. Austin?
21		MR. AUSTIN: We have no redirect, Mr.
22		Chairman.
23		CHAIRMAN SAUNDERS: You may step
24		down, sir.

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1		MR. AUSTIN: Our next witness would
2		be Mr. Larry Washington.
3		WHEREUPON: LARRY A. WASHINGTON,
4		FIRST BEING DULY SWORN, ASSUMES THE STAND
5		AND TESTIFIES AS FOLLOWS:
6	DIRE	CT EXAMINATION BY MR. AUSTIN:
7	Q	Please give us your name and business address.
8	A	My name is Larry Washington. My business address is
9		411 South Wilmington Street, Raleigh, North Carolina.
10	Q	Mr. Washington, by whom are you employed and in what
1,1		capacity?
12	A	I am employed by CP&L. I am Manager of Fuel Accounting.
13	Q	In connection with this proceeding, did you prepare and
14		cause to be prefiled testimony consisting of three pages
15	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	in question and answer form?
16	A	Yes, I did.
17	Q	Do you have any corrections or additions to the
18		testimony?
19	A	No, I do not.
20	Q	If I were to ask you the questions contained therein,
21		your answers would be the same?
22	A	Yes.
23		MR. AUSTIN: Mr. Chairman, we would
24		ask at this time that Mr. Washington's
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1	testimony prefiled with the Commission be
2	copied into the record as if given orally
3	from the stand.
4	CHAIRMAN SAUNDERS: It will be
5	admitted as if read, sir.
6	Q I believe you had one exhibit that accompanied your
7	testimony?
8	A Yes, sir.
9	Q Did you prepare that exhibit or cause it to be prepared
10	under your supervision?
11	A Yes, sir.
12	MR. AUSTIN: Mr. Chairman, we would
13	ask at this point that Mr. Washington's
14	exhibit be received as the next Hearing
15	Exhibit.
16	CHAIRMAN SAUNDERS: It will be
17	Hearing Exhibit #2 and entered into the
18	evidence of this case.
19	[HEARING EXHIBIT #2 MARKED FOR
20	IDENTIFICATION AND ACCEPTED INTO EVIDENCE]
21	[PREFILED TESTIMONY OF
22	LARRY A. WASHINGTON FOLLOWS]:
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Comparison of CP&L Installed Generating Capacity to Actual Generation Mix

